CLAIMS

1. A method in a computer-based environment for providing transmission-based billing of content that transmits data over a network, comprising:

determining billing tracking code; and

instrumenting the determined billing tracking code into the content thereby modifying the content, such that, when the modified content is executed on a target device, the billing tracking code automatically communicates billing data based upon an amount of data transmitted between the modified content and the network.

2. The method of claim 1 wherein the billing tracking code tracks the amount of data sent from the instrumented content over the network.

3. The method of claim 2 wherein the network is the Internet.

4. The method of claim 2 wherein the amount of data is tracked at a packet level that is logically defined.

5. The method of claim 1 wherein the billing tracking code tracks the amount of data received by the instrumented content from the network.

6. The method of claim 5 wherein the network is the Internet.

7. The method of claim 5 wherein the amount of data is tracked at a packet level that is logically defined.

8. The method of claim 1 wherein the content is Java-based.

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9.   The method of claim 1 wherein the content contains byte-code instructions.

10.   The method of claim 1 wherein the instrumenting is accomplished at a byte-code level of content examination.

11.   The method of claim 1 wherein the instrumented content includes a security key and wherein the security key is transmitted with the automatically communicated billing data so that the integrity of the source of the billing data can be verified.

12.   The method of claim 11 wherein the security key is based upon a random number.

13.   The method of claim 11 wherein the security key is application and subscriber specific.

14.   The method of claim 11 wherein the security key in instrumented into the content upon receiving a request to download the content.

15.   The method of claim 1 wherein the environment is integrated with a wireless carrier infrastructure.

16.   The method of claim 1, further comprising causing the instrumented content to be downloaded to a target device over a wireless transmission medium.

17.   The method of claim 16 wherein the content is requested by a subscriber of a carrier from the computer-based environment over a wireless transmission medium.

18.   The method of claim 1, further comprising causing the instrumented content to be downloaded to a target device over a wired transmission medium.

19.   The method of claim 18 wherein the wired transmission medium is the Internet.

20.   The method of claim 1 wherein the billing data comprises at least one of amount of data sent, amount of data received, a time stamp, an application identifier, a security key, a transaction identifier, and a retry expiration indicator.

21.   The method of claim 1 wherein the billing data is automatically communicated on the transmission basis to a billing server system.

22.   The method of claim 21 further comprising transmitting data that is not billing data directly between the subscriber device and a server system that is not the billing server system.

23.   The method of claim 1, further comprising integrating the billing data with customer-based billing information to generate a customer data record.

24.   The method of claim 1 wherein the billing data is used to support a plurality of billing policies.

25.   The method of claim 24 wherein the billing policies include a promotional offer that provides reduced charges for a designated application.

26.   The method of claim 24 wherein the billing policies are provided by a content provider.

27.   The method of claim 1 wherein the billing data are used to provide royalty payments to providers of the content.

28.   The method of claim 1, further comprising causing data transmitted between the instrumented content and the network to be routed in accordance with the automatically communicated transmission based billing data.

29.   The method of claim 28 wherein the routing enables efficient use of resources on the network.

30.   The method of claim 28 wherein a priority is assigned to the content based upon transmission usage.

31.   The method of claim 1 wherein the billing tracking code utilizes a proxy store and forward technique to transmit billing data and data transmission packets between the instrumented content and a plurality of server systems.

32.   A network-based transmission medium containing content that has been instrumented with billing tracking code, whereby the billing tracking code automatically generating billing data on a transmission basis when the content is executed on a target device.

33.   The transmission medium of claim 32 wherein the billing tracking code tracks the amount of data sent from the instrumented content over the network.

34.   The transmission medium of claim 33 wherein the network is the Internet.

35.   The transmission medium of claim 33 wherein the amount of data is tracked at a packet level that is logically defined.

36. The transmission medium of claim 32 wherein the billing tracking code tracks the amount of data received by the instrumented content from the network.

37. The transmission medium of claim 36 wherein the network is the Internet.

38. The transmission medium of claim 36 wherein the amount of data is tracked at a packet level that is logically defined.

39. The transmission medium of claim 32 wherein the content is Java-based.

40. The transmission medium of claim 32 wherein the instrumenting is accomplished at a byte-code level of content examination.

41. The transmission medium of claim 32 wherein the content contains byte-code instructions.

42. The transmission medium of claim 32 wherein the instrumented content includes a security key.

43. The transmission medium of claim 32 wherein the security key is application and subscriber specific.

44. The transmission medium of claim 32 wherein the transmission medium is a wireless transmission medium.

45. The transmission medium of claim 32 wherein the transmission medium is a wired transmission medium.

46. The transmission medium of claim 45 wherein the wired transmission medium is the Internet.

47. The transmission medium of claim 32 wherein the billing tracking code automatically generates at least one of amount of data sent, amount of data received, a time stamp, an application identifier, a security key, a transaction identifier, and a retry expiration indicator.

48. The transmission medium of claim 32 wherein the billing tracking code is used to route data from the content in accordance with the transmission based billing data.

49. The transmission medium of claim 32 wherein the content is transmitted to a target wireless device.

50. A transmission-based billing system in a computer environment for automatically generating billing data for content that executes on a client device and that transmits data over a network, comprising:

code modifier that instruments the content with billing tracking code, that, when executed on the client device, automatically communicates billing data that reflects the amount of data transmitted over the network.

51. The billing system of claim 50 wherein the billing tracking code tracks the amount of data sent from the instrumented content over the network.

52. The billing system of claim 51 wherein the network is the Internet.

53. The billing system of claim 51 wherein the amount of data is tracked at a logical packet level.

54. The billing system of claim 50 wherein the billing tracking code tracks the amount of data received by the instrumented content from the network.

55. The billing system of claim 54 wherein the network is the Internet.

56. The billing system of claim 54 wherein the amount of data is tracked at a logical packet level.

57. The billing system of claim 50 wherein the content is Java-based.

58. The billing system of claim 50 wherein the content contains byte-code instructions.

59. The billing system of claim 50 wherein the instrumenting is accomplished at a byte-code level of content examination.

60. The billing system of claim 50 wherein the instrumented content includes a security key and wherein the security key is transmitted with the automatically communicated billing data so that the integrity of the source of the billing data can be verified upon receipt.

61. The billing system of claim 60 wherein the security key is based upon a random number.

62. The billing system of claim 60 wherein the security key is application and subscriber specific.

63. The billing system of claim 60 wherein the security key in instrumented into the content upon receiving a request to download the content.

64. The billing system of claim 50 wherein the computer environment is integrated with a wireless carrier infrastructure.

65. The billing system of claim 50, further comprising causing the instrumented content to be downloaded to a target device over a wireless transmission medium.

66. The billing system of claim 65 wherein the content is requested by a subscriber of a carrier from the computer environment over a wireless transmission medium.

67. The billing system of claim 50, further comprising causing the instrumented content to be downloaded to a target device over a wired transmission medium.

68. The billing system of claim 67 wherein the wired transmission medium is the Internet.

69. The billing system of claim 50 wherein the billing data comprises at least one of amount of data sent, amount of data received, a time stamp, an application identifier, a security key, a transaction identifier, and a retry expiration indicator.

70. The billing system of claim 50 wherein the billing data is automatically communicated on the transmission basis to a billing server system.

71. The billing system of claim 70 further comprising a packet detecting and forwarding module for transmitting data that is not billing data directly between the subscriber device and a server system that is not the billing server system.

72. The billing system of claim 50, further comprising integrating the billing data with customer-based billing information to generate a customer data record.

73. The billing system of claim 50 wherein the billing data is used to support a plurality of billing policies.

74. The billing system of claim 73 wherein the billing policies include a promotional offer that provides reduced charges for a designated application.

75. The billing system of claim 73 wherein the billing policies are provided by a content provider.

76. The billing system of claim 50 wherein the billing data are used to provide royalty payments to providers of the content.

77. The billing system of claim 50, further comprising causing data transmitted between the instrumented content and the network to be routed in accordance with the transmission-based billing data.

78. The billing system of claim 77 wherein the routing enables efficient use of resources on the network.

79. The billing system of claim 77 wherein a priority is assigned to the content based upon transmission usage.

80. The billing system of claim 50 wherein the billing tracking code incorporates a proxy store and forward technique to transmit billing data and data transmission packets between the instrumented content and a plurality of server systems.

81.   A computer-readable memory medium containing instructions for controlling a computer processor in a wireless device to automatically transmit packet-based billing data on a per-content basis, by:

when a packet of data is received by content from a network, logging the amount of data received with an identifier of the content;

when a packet of data is to be sent by the content over the network, logging the amount of data to be sent with an identifier of the content; and

transmitting the logged amount of data with the identifier of the content to a server system to be accumulated, thereby enabling the server system to bill a subscriber based upon the accumulated data.

82.   The computer-readable memory medium of claim 81 wherein the logging the amount of data is performed by code that is transparently loaded onto the wireless device.

83.   The computer-readable memory medium of claim 81 wherein the logging the amount of data and transmitting the logged data are performed by code that resides in a code library.

84.   The computer-readable memory medium of claim 81 wherein the logging the amount of data and transmitting the logged data are performed by code that resides in the network driver software of the wireless device.

85.   The computer-readable memory medium of claim 81 wherein the logging the amount of data and transmitting the logged data are performed by code that is written to a specification for transmission-based billing.

86.   The computer-readable memory medium of claim 81 wherein the logging the amount of data and transmitting the logged data are performed by code that is instrumented into the instructions prior to execution of the instructions on the client device.

87.   A method in a wireless device for automatically transmitting packet-based billing data, comprising:

when a packet of data is received from a network, logging the amount of data received;

when a packet of data is to be sent over the network, logging the amount of data to be sent; and

transmitting the logged amount of data to a server system to be accumulated, thereby enabling the server system to bill a subscriber based upon the accumulated data.

88.   The method of claim 87 wherein the logging the amount of data is performed by code that is transparently loaded onto the wireless device.

89.   The method of claim 87 wherein the logging the amount of data and transmitting the logged data are performed by code that resides in a code library.

90.   The method of claim 87 wherein the logging the amount of data and transmitting the logged data are performed by code that resides in the network driver software of the wireless device.

91.   The method of claim 87 wherein the logging the amount of data and transmitting the logged data are performed by code that is written to a specification for transmission-based billing.

92.   The method of claim 87 wherein the logging the amount of data and transmitting the logged data are performed by code that is instrumented into the instructions prior to execution of the instructions on the client device.

93.   A wireless device that automatically transmits packet-based billing data, comprising:

application with billing and tracking code that,

when a packet of data is received from a network, logging the amount of data received;

when a packet of data is to be sent over the network, logging the amount of data to be sent; and

transmitting the logged amount of data to a server system to be accumulated, thereby enabling the server system to bill a subscriber based upon the accumulated data.

94.   The wireless device of claim 93 wherein the billing and tracking code is transparently loaded onto the wireless device.

95.   The wireless device of claim 93 wherein the billing and tracking code resides in a code library.

96.   The wireless device of claim 93 wherein the billing and tracking code resides in the network driver software of the wireless device and is invoked from the application.

97.   The wireless device of claim 93 wherein the billing and tracking code is written to a specification for transmission-based billing.

98.   The wireless device of claim 93 wherein the billing and tracking code is instrumented into the application prior to execution of the application.